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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/561,256

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EXAMINER

RUSH, ERIC

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/561,256	<b>Applicant(s)</b> KOSHIZEN ET AL.	
	<b>Examiner</b> ERIC RUSH	<b>Art Unit</b> 2624	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 April 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 19-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/17/2008</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

This action is responsive to the arguments and remarks received on 14 April 2008. Claims 19 – 40 are currently pending.

### ***Specification***

1. The objection to the abstract is withdrawn in view of the amendment and remarks received on 14 April 2008.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: determining a first facial component that maximizes a posterior probability that the person class of the first facial component is the first person. The claim merely recites that the first indicator component comprises a first facial component that maximizes a posterior probability that the person class of the first facial component is the first person, but fails to specify how and when such a component is determined as a component that maximizes such

probability. If there is no determination step of such a component how can the applicant's claimed invention utilize a component that maximizes a posterior probability, so for purposes of examination it will be understood that such a component is implicitly exists out of the multiple facial components.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 19 – 20, 22 – 31 and 33 – 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Bernd Heisele, Purdy Ho, Tomaso Poggio, "Face Recognition with Support Vector Machines: Global versus Component-based Approach", Proceedings 8<sup>th</sup> International Conference on Computer Vision, Volume 2, pp. 688 – 694, Vancouver 2001.

- With regards to claims 19 & 30, Heisele et al. teach a method and system for recognizing faces of persons, comprising: a training module configured to train a facial component recognition system to recognize a facial component; (Heisele et al., Section 4, Section 4.1) a population module configured to populate a first knowledge base with facial components and, for each facial component, the facial component's body part classification;

(Heisele et al., Figure 3, Section 4.2) a body part module configured to use the first knowledge base to determine, for each facial component in a plurality of facial components, a body part classification for the facial component, wherein the plurality of facial components comprises facial components extracted from facial identification training image data of a face of a first person at a first viewpoint and a face of a second person at a second viewpoint; (Heisele et al., Section 5 Paragraph 1 – Paragraph 2) an indicator component module configured to determine, from said plurality of facial components and their determined body part classifications, a first indicator component for the first person and a second indicator component for the second person, wherein the first indicator component comprises a first facial component that maximizes a posterior probability that the person class of the first facial component is the first person, (Heisele et al., Section 2, Section 2.1 and Section 2.2, As the claim is currently drafted there is no step of determining such a first facial component that maximizes a posterior probability, therefor since Heisele et al. rely upon multiple facial components, as does claim 19, it is implicit that one of the facial components disclosed by Heisele et al. will be a component that maximizes such a probability) and wherein the second indicator component comprises a second facial component that maximizes a posterior probability that the person class of the second facial component is the second person. (Heisele et al., Section 3.2 Equation 3)

- With regards to claims 20 & 31, Heisele et al. teach the method and system of claims 19 and 30, respectively, wherein a body part classification of the first indicator component and a body part classification of the second indicator component are different. (Heisele et al., Section 1 Paragraph 4, Section 4.1, Figures 3 and 4)
  
- With regards to claims 22 & 33, Heisele et al. teach the method and system of claims 19 and 30, respectively, wherein the indicator component module is further configured to: determine a first conditional probability, that a class is the first person, of the facial components extracted from the facial identification training image data of the face of the first person at the first viewpoint; (Heisele et al., Section 4.2, Section 3.2 Paragraphs 2 - 4, and Section 5 Paragraphs 1 – 2 and Paragraphs 5 - 7) determine a first posterior probability, that a class is the first person, by multiplying the conditional probability at the first viewpoint by a prior probability, that a class is the first person; (Heisele et al., Section 4.2, Section 3.2 Paragraphs 2 - 4, and Section 5 Paragraphs 1 – 2 and Paragraphs 5 - 7) determine a second conditional probability, that a class is the first person, of facial components extracted from facial identification training image data of the face of the first person at an additional viewpoint; (Heisele et al., Section 4.2, Section 3.2 Paragraphs 2 - 4, and Section 5 Paragraphs 1

- 2 and Paragraphs 5 - 7) and determine a second posterior probability, that a class is the first person, by multiplying the second conditional probability by the first posterior probability. (Heisele et al., Section 4.2, Section 3.2 Paragraphs 2 - 4, and Section 5 Paragraphs 1 – 2 and Paragraphs 5 - 7)
- With regards to claims 23 & 34, Heisele et al. teach the method and system of claims 22 and 33, respectively, wherein the prior probability, that the class is the first person, comprises one  $N$ th where  $N$  is a number of person classes. (Heisele et al., Section 4.2, and Section 3.2 Paragraphs 2 - 4)
- With regards to claims 24 & 35, Heisele et al. teach the method and system of claims 19 and 30, respectively, further comprising a storage module configured to store, in a second knowledge base, the first indicator component for the first person and the second indicator component for the second person. (Heisele et al., Abstract, Section 1 Paragraph 1, and Section 5 Paragraph 1, although Heisele et al. is silent to a storage module it is implicit from the discussion of using SVM recognition for every person in a database as well as the recording of the test set)

- With regards to claims 25 & 36, Heisele et al. teach the method and system of claims 24 and 35, respectively, further comprising a receiving module configured to receive body part classifications of facial components at various viewpoints of a person to be identified; (Heisele et al., Section 5 Paragraph 1 – Paragraph 2) and an identification module configured to identify the person using an indicator component stored in the second knowledge base. (Heisele et al., Section 1 Paragraph 4, Section 4.1, Figures 3 and 4)
- With regards to claims 26 & 37, Heisele et al. teach the method and system of claims 19 and 30, respectively, wherein the first viewpoint and the second viewpoint are different. (Heisele et al., Section 5 Paragraph 1 – Paragraph 2 and Paragraphs 5 - 7)
- With regards to claims 27 & 38, Heisele et al. teach the method and system of claims 19 and 30, respectively, wherein the training module is further configured to: receive facial component training image data of faces of persons at various viewpoints; (Heisele et al., Section 5 Paragraphs 1 - 2) extract facial components at various viewpoints from the facial component training image data of faces of persons at various viewpoints; (Heisele et al., Section 4.1 – 4.2) and train a body part



classifier module using the extracted facial components. (Heisele et al.,  
Section 5 Paragraphs 1 - 2)

- With regards to claims 28 & 39, Heisele et al. teach the method and system of claims 27 and 38, respectively, wherein the body part classifier module performs one-versus-all classification. (Heisele et al., Section 4.2 and Section 5 Paragraphs 1 - 2)
- With regards to claims 29 & 40, Heisele et al. teach the method and system of claims 19 and 30, respectively, wherein the body part module is further configured to: receive facial identification training image data of the face of the first person at the first viewpoint and the face of the second person at the second viewpoint; (Heisele et al., Section 5 Paragraphs 1 - 2) extract facial components from the facial identification training image data; (Heisele et al., Section 4.1 Figures 3 - 4) and determine body part classifications of the extracted facial components using the first knowledge base. (Heisele et al., Section 4.1 Figures 3 - 4)

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 21 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernd Heisele, Purdy Ho, Tomaso Poggio, "Face Recognition with Support Vector Machines: Global versus Component-based Approach", Proceedings 8<sup>th</sup> International Conference on Computer Vision, Volume 2, pp. 688 – 694, Vancouver 2001 in view of Paul Viola, "Complex Feature Recognition: A Bayesian Approach for Learning to Recognize Objects," AI Memo No. 1591, Artificial Intelligence Laboratory, MIT, Cambridge, MA, November 1996..

- With regards to claims 21 & 32, Heisele et al. teach the method and system of claims 19 and 30, respectively. Heisele et al. fail to teach wherein the indicator component module is further configured to determine the first indicator component for the first person using Bayesian estimation. Viola teaches wherein the indicator component module is further configured to determine the first indicator component for the first person using Bayesian estimation. (Viola, Abstract, Figures 1 and 2, and

Section 2 Paragraphs 1 – 5) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Heisele et al. to include the teachings of Viola. This modification would have been prompted in order to aid in the efficient processing and recognition of complex images, such as faces. This approach is well known in the art and would be obvious to include in the training algorithm especially when various viewpoints are involved.

### ***Response to Arguments***

9. Applicant's arguments filed 14 April 2008 have been fully considered but they are not persuasive. On pages 11 and 12 of the remarks, Applicant's representative states that the rejection based on Heisele et al. was improper. In an interview conducted April 4, 2008 the Examiner prematurely agreed but upon further review and reconsideration of the cited art of record and upon further review and examination of the claim the Examiner has concluded that Heisele et al. discloses the subject matter as claimed in claim 19. During the interview the Attorney of record argued that Heisele et al. failed to disclose a first facial component that maximizes a posterior probability that the person class of the first facial component is the first person. The Examiner respectfully disagrees. As the claim is currently drafted there is no step of determining such a first facial component that maximizes a posterior probability, therefor since Heisele et al. rely upon multiple facial components, as does claim 19, it is implicit that one of the facial components disclosed by Heisele et al. will be a component that maximizes such a

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probability. In claim 19, there is no step of determining which facial component maximizes said probability, which makes the claim indefinite with regards to 35 U.S.C. 112 second paragraph and further supports the Examiner's argument that there implicitly exists a facial component out of the multiple facial component that maximizes a posterior probability that the person class of the first facial component is the first person. This action will be non-final as was agreed upon during the interview.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIC RUSH whose telephone number is (571)270-3017. The examiner can normally be reached on 7:30AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571) 272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ER

/Samir A. Ahmed/  
Supervisory Patent Examiner, Art Unit 2624